Abstract

Background and Aim

Artificial teeth are exposed to different beverages in the oral cavity with a possible color changes after being used by the patients. Due to the importance of esthetics; the color stability of the artificial teeth must be adequate. The present study compared the color stability of 3 acrylic teeth after being exposed to tea, coffee and cola solutions.

Materials and Methods

In this *in vitro* trial, 30 acrylic artificial teeth were obtained for each Ivoclar (Italy); PolyDent (Slovenia) and Apple (Iran) brands and exposed for 1; 3 and 6 weeks to coffee, cola and tea solutions without any contact. The specimens' color was measured by spectrophotometer before and after exposure times while the overall color change (ΔE) was calculated on these data. Total color change values were analyzed among the 3 groups and the paired comparisons were done by Tukey test.

Results

Coffee showed the most total color change values in the Apple acrylic teeth after 6 months exposure (mean ΔE of 4.6; 3.4 and 3.4 for coffee, tea and cola respectively); but tea similarly affected the color stability of 3 acrylic teeth. The highest ΔE was noted for Ivoclar groups after 6 weeks exposure in cola solution (mean ΔE of 3.6; 3.4 and 2.8 for cola; tea and coffee). In total exposures; the most mean ΔE values were obtained in the Apple; PolyDent and Ivoclar acrylic teeth respectively (mean values of 3.8; 3.4; and 3.3; $p<0.001$). Furthermore; the mean total color change values following 1 week exposure were 2.75; 2.68 and 2.88 ($p=0.29$) and 3.6; 3.2 and 3.6 ($p<0.002$) after 6 weeks exposures for the 3 groups.

Conclusion

Regarding $\Delta E \leq 3.3$ as an acceptable clinical measure; and although with considerable color change values in the all studied acrylic teeth; the color stability of Ivoclar teeth was clinically acceptable to some degrees. But; there are concerns in terms of the color stability of Apple and PolyDent acrylic teeth.

Key words

Color stability; Acrylic artificial teeth, Spectrophotometer, Colorant solutions